

Amendment  
Serial No. 10/692,343

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IN THE CLAIMS

Please amend the claim as follows:

1. (Currently Amended) An optical waveguide element having a directional coupler, a light source, and a photodetector, the directional coupler comprising:

a first waveguide and a second waveguide located adjacent to each other for mode coupling;

a first dummy waveguide extending from an one end of the second waveguide;

a reflector installed on an end surface of the first dummy waveguide; and

a second dummy waveguide located adjacent to the first dummy waveguide for mode coupling,

wherein the directional coupler is configured such that optical signals progressing from the second ~~dummy~~ waveguide to the ~~first~~ second dummy waveguide attenuate while sequentially passing through the first dummy waveguide, the reflector, and the second dummy waveguide, and

wherein the light source and the photodetector are connected to ~~one of~~ the first and second waveguides, respectively.

2. (Previously Presented) The optical waveguide element as claimed in claim 1, further comprising:

an input waveguide extending from one end of the first waveguide, and enabling optical signals to be input to the directional coupler; and

an output waveguide extending from another end of the second waveguide,

wherein the optical signals input through the input waveguide are coupled to the second



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waveguide in the directional coupler and output to the output waveguide.

3. (Previously Presented) The optical waveguide element as claimed in claim 1, further comprising:

an input waveguide extending from one end of the first waveguide, and enabling optical signals to be input to the directional coupler;

an output waveguide extending from other end of the first waveguide;

wherein the light source is coupled to an end surface of the output waveguide[[:]], and

wherein the optical signals that are generated from the light source, ~~that~~ pass through the output waveguide, and ~~that~~ are output to the input waveguide through the first waveguide.

4. (Previously Presented) The optical waveguide element as claimed in claim 1, further comprising:

an output waveguide extending from other end of the second waveguide;

wherein the light source is coupled to an end surface of the output waveguide[[:]], and

wherein the optical signals that are generated from the light source, ~~that~~ pass through the output waveguide, and ~~that~~ are coupled to the first waveguide through the directional coupler.

5. (Original) The optical waveguide element as claimed in claim 1, wherein an end surface of the second dummy waveguide is terminated in such a way so as to be inclined with respect to a longitudinal direction of the second dummy waveguide.

6. (Original) The optical waveguide element as claimed in claim 1, further comprising a curved waveguide extending from an end surface of the second dummy waveguide.



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7. (Previously Presented) The optical waveguide element as claimed in claim 1, further comprising:

an input waveguide extending from one end of the first waveguide and enabling optical signals to be input to the direction coupler; and

an output waveguide extending from other end of the first waveguide,

wherein the photodetector is coupled to an end surface of the output waveguide.

8. (Previously Presented) The optical waveguide element as claimed in claim 1, further comprising:

an input waveguide extending from one end of the first waveguide, and enabling optical signals to be input to the directional coupler;

an output waveguide extending from other end of the first waveguide;

a reflector installed on an end surface of the output waveguide;

a third waveguide extending from the reflector,

\_\_\_\_\_ wherein the light source is installed on an end surface of the third waveguide[[:]], and

wherein optical signals that are generated from the light source, ~~that~~ sequentially pass through the third waveguide, the reflector, the output waveguide, and the directional coupler, and ~~that~~ are outputted to the input waveguide.

9. (Previously Presented) The optical waveguide element as claimed in claim 1, further comprising:

an input waveguide extending from one end of the first waveguide, and enabling optical signals to be input to the directional coupler;

an output waveguide extending from other end of the first waveguide;



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a reflector installed on an end surface of the output waveguide;

a third waveguide extending from the reflector, wherein the photodetector is installed on an end surface of the third waveguide[[:]], and

wherein optical signals that are generated from the light source, ~~that~~ sequentially pass through the directional coupler, the output waveguide, the reflector, and the third waveguide, and ~~that~~ are input to the input waveguide through the directional coupler.

10. (Canceled)

11. (Previously Presented) An optical waveguide element having a directional coupler, the directional coupler comprising:

a first waveguide and a second waveguide located adjacent to each other for mode coupling;

a first dummy waveguide extending from an one end of the second waveguide;

a second dummy waveguide having a first internally isolated end surface and being located adjacent to the first dummy waveguide for mode coupling; and

a first reflector coupled to a first end surface of the first dummy waveguide, the first end surface located away from the second waveguide, and to a second end surface of the second dummy waveguide, the second end surface disposed away from the first internally isolated end surface,

wherein optical signals progressing from the second dummy waveguide to the first dummy waveguide attenuate while sequentially passing through the reflector and the second dummy waveguide.



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12. (Currently Amended) The optical waveguide element as claimed in claim 11, further comprising:

an input waveguide extending from one end of the first waveguide, and enabling optical signals to be input to the directional coupler; and

an output waveguide extending from another end of the second waveguide,

wherein the optical signals input through the input waveguide are coupled to the second waveguide in the directional coupler and are output to the output waveguide.

13. (Previously Presented) The optical waveguide element as claimed in claim 11, further comprising:

an input waveguide extending from one end of the first waveguide, and enabling optical signals to be input to the directional coupler;

an output waveguide extending from other end of the first waveguide ; and

a light source coupled to an end surface of the output waveguide,

wherein optical signals generated from the light source pass through the output waveguide and are output to the input waveguide through the first waveguide.

14. (Previously Presented) The optical waveguide element as claimed in claim 11, further comprising:

an output waveguide extending from other end of the second waveguide; and

a light source coupled to an end surface of the output waveguide,

wherein optical signals generated from the light source pass through the output waveguide and are coupled to the first waveguide through the directional coupler.



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15. (Previously Presented) The optical waveguide element as claimed in claim 11, wherein the internally isolated end surface of the second dummy waveguide is inclined with respect to the cross section of the second dummy waveguide.

16. (Previously Presented) The optical waveguide element as claimed in claim 11, further comprising a curved waveguide coupled to the internally isolated end surface of the second dummy waveguide.

17. (Previously Presented) The optical waveguide element as claimed in claim 11, further comprising:

an input waveguide extending from one end of the first waveguide and enabling optical signals to be input to the direction coupler;

an output waveguide extending from other end of the first waveguide; and

a photodetector coupled to an end surface of the output waveguide.

18. (Currently Amended) The optical waveguide element as claimed in claim 11, further comprising:

an input waveguide extending from one end of the first waveguide, and enabling optical signals to be input to the directional coupler;

an output waveguide extending from other end of the first waveguide;

a second reflector installed on an end surface of the output waveguide;

a third waveguide extending from the reflector; and

a light source installed on an end surface of the third waveguide,

wherein optical signals generated from the light source sequentially pass through the third



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waveguide, the reflector, the output waveguide and the directional coupler, and are outputted to the input waveguide.

19. (Currently Amended) The optical waveguide element as claimed in claim 11, further comprising:

an input waveguide extending from one end of the first waveguide, and enabling optical signals to be input to the directional coupler;

an output waveguide extending from other end of the first waveguide;

a second reflector installed on an end surface of the output waveguide;

a third waveguide extending from the reflector; and

a photodetector installed on an end surface of the third waveguide,

wherein optical signals generated from the light source sequentially pass through the directional coupler, the output waveguide, the reflector and the third waveguide, and are input to the input waveguide through the directional coupler.

20. (Previously Presented) The optical waveguide element as claimed in claim 11, further comprising:

an output waveguide extending from other end of the second waveguide; and

a light source coupled to an end surface of the output waveguide,

wherein optical signals generated from the light source are coupled to the first waveguide through the directional coupler.



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21. (New) The optical waveguide element as claimed in claim 1, wherein the directional coupler is configured such that optical signals progressing from the second waveguide to the second dummy waveguide disappear as the optical signals sequentially pass through the first dummy waveguide, the reflector, and the second dummy waveguide.